

## Claims

- [1] A handover method in a wireless portable Internet system, comprising:
- a mobile subscriber station determining whether a drop state is generated;
  - the mobile subscriber station selecting a target base station from adjacent base stations when the mobile subscriber station determines that the drop state is generated;
  - the mobile subscriber station including an identifier of a previous base station in an initial message and transmitting the initial message to the target base station; and
  - the mobile subscriber station carrying out re-entry into a network through the target base station.
- [2] A handover method in a wireless portable Internet system, comprising:
- a mobile subscriber station determining whether a drop state is generated;
  - the mobile subscriber station selecting a target base station from adjacent base stations when the mobile subscriber station determines that the drop state is generated;
  - the mobile subscriber station including an identifier of a previous base station in an initial message and transmitting the initial message to the target base station; and
  - the mobile subscriber station carrying out re-entry into a network through the target base station,
- wherein the a) comprises
- receiving the base station identifier from an adjacent base station,  
comparing the received identifier with the identifier of a serving base station, and  
determining that the mobile subscriber station is in the drop state when the identifier of the adjacent base station is not identical to the identifier of the serving base station.
- [3] A handover method in a wireless portable Internet system, comprising:
- a mobile subscriber station determining whether a drop state is generated;
  - the mobile subscriber station selecting a target base station from adjacent base stations when the mobile subscriber station determines that the drop state is generated;
  - the mobile subscriber station including an identifier of a previous base station in an initial message and transmitting the initial message to the target base

- station; and
- d) the mobile subscriber station carrying out re-entry into a network through the target base station,  
wherein the a) comprises  
transmitting a handover request message to a serving base station,  
waiting for a handover response message for the handover request message;  
determining whether the handover response message arrives at the mobile subscriber station within a predetermined critical time,  
searching for an identifier of a base station currently communicating with the mobile subscriber station and comparing the searched identifier with the identifier of the previous base station when the handover response message does not arrive at the mobile subscriber station within the predetermined critical time,  
and  
determining that the mobile subscriber station is in the drop state when the searched identifier is not identical to the identifier of the previous base station.
- [4] The handover method as claimed in claim 3, wherein the handover request message is a HO/REQ message, which is a MAC message prescribed by IEEE 802.16, and the handover response message is a HO/RSP message, which is a MAC message prescribed by IEEE 802.16.
- [5] The handover method as claimed in claim 1, wherein the initial message is a ranging request message, an RNG/REQ message, which is a MAC message prescribed by IEEE 802.16.
- [6] The handover method as claimed in claim 2, wherein the initial message is a ranging request message, an RNG/REQ message, which is a MAC message prescribed by IEEE 802.16.
- [7] The handover method as claimed in claim 3, wherein the initial message is a ranging request message, an RNG/REQ message, which is a MAC message prescribed by IEEE 802.16.
- [8] The handover method as claimed in claim 1, wherein the c) includes the identifier of the previous base station and a MAC address of the mobile subscriber station in the initial message and transmits the initial message.
- [9] A handover method in a wireless portable Internet system, comprising:  
a) a mobile subscriber station requesting a target base station to execute ranging;  
b) the mobile subscriber station including an identifier of a previous base station in a ranging request MAC message and transmitting the ranging request MAC

- message to the target base station;
- c) the target base station requesting the previous base station to execute handover of the mobile subscriber station based on the identifier of the previous base station;
  - d) the previous base station transmitting information about the mobile subscriber station to the target base station for handover; and
  - e) the mobile subscriber station re-entering a network through the target base station.
- [10] The handover method as claimed in claim 9, further comprising the target base station transmitting data buffered in the previous base station to the mobile subscriber station re-entering the network.
- [11] The handover method as claimed in claim 9, wherein the ranging request message further includes a MAC address of the mobile subscriber station.
- [12] The handover method as claimed in claim 9, wherein the length of the identifier of the previous base station is 48 bits.
- [13] A handover method in a wireless portable Internet system, comprising:
  - a) a mobile subscriber station requesting a target base station to execute ranging;
  - b) the mobile subscriber station including an identifier of a previous base station and a string generated by encoding a ranging request MAC message in the ranging request MAC message and transmitting the ranging request MAC message to the target base station;
  - c) the target base station requesting the previous base station to execute handover of the mobile subscriber station based on the identifier of the previous base station;
  - d) the previous base station authenticating the MAC message using the encoded string;
  - e) the previous base station transmitting information about the mobile subscriber station to the target base station for handover when the authentication is successful; and
  - f) the mobile subscriber station re-entering a network through the target base station.
- [14] The handover method as claimed in claim 13, wherein the d) encodes the received MAC message using an authentication key, compares the encoded result with the encoded string, and authenticates the MAC message when the encoded result is identical to the encoded string.

- [15] The handover method as claimed in claim 14, wherein the information about the mobile subscriber station includes the authentication key.
- [16] A handover method in a wireless portable Internet system, comprising:
- a) a mobile subscriber station determining whether a drop state is generated;
  - b) the mobile subscriber station selecting a target base station from adjacent base stations when the mobile subscriber station determines that the drop state is generated;
  - c) the mobile subscriber station including the identifier of a previous base station and a string generated by encoding an initial message in the initial message and transmitting the initial message to the target base station; and
  - d) the mobile subscriber station carrying out re-entry into a network through the target base station.
- [17] The handover method as claimed in 16, wherein the string is generated by encoding the initial message using an authentication key of the previous base station.
- [18] The handover method as claimed in claim 17, wherein the a) comprises:  
receiving the base station identifier from an adjacent base station;  
comparing the received identifier with the identifier of a serving base station;  
and  
determining that the mobile subscriber station is in the drop state when the identifier of the adjacent base station is not identical to the identifier of the serving base station.
- [19] The handover method as claimed in claim 17, wherein the a) comprises:  
transmitting a handover request message to a serving base station;  
waiting for a handover response message for the handover request message;  
determining whether the handover response message arrives at the mobile subscriber station within a predetermined critical time; and  
determining that the mobile subscriber station is in the drop state when the handover response message does not arrive at the mobile subscriber station within the predetermined critical time.